THE INFORMATION RETRIEVAL COMPLEX: Some speculations, analyses, and proposals for full-purpose systems for the retrieval, display and integration of data.

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We will treat of a number of topics here, with the hope that they will all turn out to be significantly related in the end. The first is information retrieval.

Information retrieval is the problem of finding information that you know something about, if only that you should obtain it; that you know is somewhere but of which you don't have full command. The simplest information retrieval system is a reference book; bigger systems are full bookshelves and libraries.

Teaching systems are sets of materials-- sentences or chapters to read, pictures to look at-- which have been arranged in some way to show or explain something to someone. (We mean to include "programmed learning" here, but to avoid confusion will speak of "programming" a machine but "arranging" materials.) A book is also such a teaching system; but so is a map in the sand, a [illegible] vocab [illegible] flashcards, or a set of lecture notes.

Display systems are the mechanical side of showing somebody something. Thus a map room, an automobile dashboard and a motion-picture theater are all display systems.

A display configuration is some way of tying together things to be displayed. By this definition, the thermometer on a poster advertising a fund drive is a display configuration, so are the "[illegible]" [illegible] made available to students, and so is a prepared outline handed out at the beginning of a lecture course.

A data-integration system is a set of devices and procedures for seeking understandable and usable relationships in data. Thus an accountant's analysis pad and an author's working outline are data-integration systems. So are the author's file cards, his desk top, and probably his wall and floor.

Current research in information retrieval is oriented to means by which practicing scientists may find specialized materials bearing on some research problem. While this is extremely important, we think it is too narrowly construed. We shall make a few general points about this, and briefly sketch some programs which arise from an alternative outlook. We will then attempt to tie this together philosophically, and then make some rather drastic suggestions for new hardware and directions of research.

Today's computers are fast and capable. They can perform hundreds of thousands of comparing and sorting operations, and transfer thousands of words of written material from magnetic tape to magnetic tape, or printer, in seconds. They can drive and inspect many kinds of peripheral equipment and even display text on a scanning tube. That these abilities should offer vast inspiration to anyone discouraged over library and indexing systems is obvious. But there is an embarrassment of riches. There are so many different ways a computer can handle and offer written material that the design of good general-purpose systems has been very slow. The question being asked, are, quite rightly, "What systems would be most useful if everybody's latent, potential needs were known? And how may these needs be ascertained, considering that the people concerned have no inkling of the capacities of the machines?"

This paper can only give some suggestions. To put it lightly, we favor the general elimination of paper.

First, we suggest carrying the use of information-retrieval systems to an earlier stage in the user's career: that is, to all general users of libraries for research and learning; second, to build fuller systems that will permit the user to use the machine for taking, storing and displaying his notes, and any other written or visual materials he might want in the future; third, to permit the gradual organization of these materials into display configurations of use to himself and others; and fourth, to provide positive facilities for making them easier to organize, casting them in effective display configurations, and incorporating them in teaching-systems.

Let us discuss some programs which would have some of these features.

A word on the property of <u>indefinite expansion</u>, which these systems take for granted. While it is true that the capacity of computer storage will always be finite, procedures are available for the attachment of new storage-space to any other storage-space if it becomes needed. That is, if the amount of magnetic tape originally allocated for indexing purposes runs out, new tape machines may be automatically <u>strung onto</u> this storage

this storage space automatically, and thereafter treated as a part of it, at least until it approaches the absolute capacity of the machine. We will assume that this absolute capacity is not approached, and that features of this kind are in operation. Thus for the present purposes we treat the storage capacity as indefinitely expandable.

I. System for ~~the~~ storage, presenting, and indexing.

1) The reading-and-writing program. Written material is etored on
(st this etage we are indifferent ss to punched csrda.)
whether itis csthode ray tube, printer, or typewriter; presumsbly not/
magnetic tape. It is resd out into some feasible displsy device,/snd eomeone

some quantity at a time. into
reade it,/ The user hae a keyboard, which

written material,
he may et any time enter/ which ie stored on another tape. He is

free to excerpt what he is reading, thst is, commend thet it

be stored ss well on bis own input tepe. He is also able to backtrack to

previous msterisl, although for this program we

will assume that there has been no previous indexing of the materisl.

2) The Great Books program. This would

plsce some collection of Great Booke on magnetic tspe drivee,

on eome feasible output device. He could also
and permit the user to read or browse,/skipping forward or backwerds in amounts

he chose.

~~and text-sequencing~~
3) The generalized text-indexing program. This is s machine which

operates colleterally with some stored text, like(1) or (2).

The text is stored in measured amounts, like the

psges or chapters of a book. On instruction by a user,

these locations will be recorded as hsving some particular significence.

For instance, the user may may subdvide the teat to his own liking,

his own
usin- ings,/chapter titles and peragraph summaries; and these hesdings,

stored in any order he wishes; now they sre a psrt, though a

perhsps on separate tapes, of the availsble texts. He may store

points, thst is, locstions in the text where a certain type of

blocks, the inclusive locations, from beginning

rials.

Some further capacities of this program sre:

The mschine will now present, on demsnd, portions of the full text

strung together on the basis of the indexing. Thus an individual may

heve the index presented to him, and requeet the material covered by

certain headings. It will then be presented to him, on the reading device,

in the order he requests it: if they sre blocks of material, the blocks

will follow one snother; if they are merely "cutting-points," he will

begin the next decides the
command the machine to/ when he

(that begen with a certain cutting-point)
relevant part/is over.

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4) The n-category program. This is a further indexing function whereby things may be "categorized" by an arranger according to whether they meet certain

criteria which interests him. In the "arrangement" phase, the items are presented to him by name or in full; he then informs the machine, by keyboard or otherwise, as to what categories they go into. There is no limitation on the number of things in a category, or the number of categories a thing may go into.

We call this the n-category program because the arranger may at any time begin a new category, and start assigning elements to that one as well. He may then backtrack and see if earlier material belongs in that category.

It should be pointed out that these categories have no content so far as the machine is concerned. They have meaning only to the arranger; the names he gives them are strictly relevant only to his purposes.

In the presentation phase, a user may ask the machine for a listing or presentation of the things in a given category, and they will be listed or presented to him.

We spoke of "things" rather than "texts" because this system would also be of use for keeping track of things not stored in the machine, such as photographs, works of art, etc.

The two phases may of course be collapsed into one, so that arranger and user are the same person at the same time.

It will be noted that this program takes over a number of functions for which card files are currently used; for example, the storage of newspaper articles by type, in which a given newspaper article falls into many categories. Even with hole-in-card systems, this is unwieldy to operate by hand. → (5)

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4) The generslized text-psthway program. This program builds on (3), allowing the arranger not only to divide the text and add msterial, but aiso to insert "pathwaya" for reading: thst ia, sequences in which he believes the material ought to be resd. The machine will so order the msterial on presenting it to the user.

It should be noted that this in effect is very like the course reading list, save that it can be hooked to system (3), which contains and presents the material.

5)

It is equivalent to the anthology — but more versatile.

If we expand this to n pathways, as we did with categories, its versatility should be clear: the arranger can set up different collections from the same universe of material to be made available to people with different needs and interests.

7a

6) Marginalia programs. These would permit users to key in their own comments, slong with brief statementa as to the kind of other user these comments might interest.

Generalized

7) Query and testing facilities. This program will present the user with questiona, which he may answer, say, by pressing buttons marked one through five or by typing in words on a keyboard. An arranger may interpolate questiona in a text-pathway and have it branch, presenting different materisls depending on the user's answer.

This permits the integration of some of the previous programs with fully-prepared or partly-prepared materisla for "programed learning."

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CLASS II machines: those which ~~permit~~ permit more intricate systems for arrangement.

~~9) The outline program~~

9) The outlining and outline-dressing program. (Skipped stuff from here)

The outlining program, therefore, does not force premature distinctiona among points. Instead, the author types in his items and they are all assigned indeterminate status. Large numbers of these items are then arrayed before him, grouped or in succession, and he makes guesses as to which shall be major headings, which shall be minor points, and which shall be ignored. He may make any number of different items, filing them by name; on demand, the machine will show him a given outline-sketch and he can "rework" it, giving commands as to the order and importance of the points.

Only machine methods will permit a number of different outlines to have working status at once. Working with card files, desk tops

and fumbling fingers, he must "bet" on the success of one or two possible outlines.

With the improvement of an outline, it may be "dressed," somewhat like the decoration of a Christmas tree, with text materials he has stored as separate outlines. This makes the evolution from outline to text clearer and more explicit; no points get lost.

10) The sequential-string program. This is a machine of more use to the novelist or motion-picture editor than to the writer of expository prose. The novelist may use it for the examination of single narrative lines-- say, the development of a given character-- abstracted from the entire work. He may work on a number of these sequences singly, and then have them amalgamated-- that is, interleaved into a single string-- on command.

11) The implication-program. This machine can take the writer's commands for the implications of his ideas and operate on them to learn their compatibility. Let us say that two of the ideas are, "the hero wears a white hat" and "the hero is mistaken for the villain." The author thinks these two items are incompatible (because the villain wears a black hat — but this is the writer's own business.) ~~and tells the machine so.~~ The writer informs the machine that they are incompatible. The machine can now keep track, in different outlines and sequential strings, of the compatibility of large sets and subsets of these items well beyond human capacity for sifting and partitioning. The machine can then inform the author when he has tried to place incompatible items in the same tentative string.

The mate of incompatibility is implication. If ~~If, on the other hand,~~ the hero's hat being white requires that he ride a pinto pony, the machine ~~can inform the author of this fact.~~ can remind the author, if the author has tentatively supposed ~~in a certain string the author directs~~ that the hero would wear a white hat, that he is bound by his own rules to make that pony ~~the pony then has to be~~ a pinto ~~by his own instruction.~~ If he wants to change his mind, that too is his own business, but he ought to keep the machine up to date. ~~Naturally these instructions are modifiable by the author as his ideas develop.~~

Some remarks about the type II programs.

The whole point of these programs is to help the author develop his ideas with greater intricacy. If they hamper him in any way they are not designed properly. We have tried to sketch a few formalizations of the work that authors generally perform informally.

We think ~~These~~ those programs ~~are~~ would be useful to anyone seeking to try out different arrangements of things.

Not? We have not gone into ~~the~~ any detail on these operations, but we do not think that ~~should~~ makes the descriptions vacuous. The problem of finding what operations are handy and ~~[illegible]~~ helpful to arrangers of material is an ~~[illegible]~~ empirical one, on which we have only made suggestions. The problem is one of preparing complex sequences of operations which are conceptually clear to the user, and which do not make any decisions for him. In a sense this is a problem of "designing" logical operations. ~~Whether~~

For instance, ~~The opera~~ the compounding of "implication" and "sequence" operations described above, leave several operations indeterminate. It is then up to the programmer to decide the most ~~useable~~ useful ways to work them out.

¶ A few short examples should make this clear. Let ~~[illegible]~~ us use this notation for compound commands by the author:

A → B	A implies B
A / B	A and B are contradictory, cannot appear together
A $\wp$ B [small p]	A precedes B
~~A → (B $\wp$ C)~~	~~A implies that B (some compound)~~
A → ( )	A implies (some compound)
( ) → A	(Some compound) implies A
A / ( )	A contradicts (some compound)
( ) / A	Some compound contradicts A.

Here are some ways the implication and sequence programs would obviously have to behave:

Now, here are some commands whose operation ~~would~~ ~~to be decided~~ are not determinate by the scheme so far described. The programmer must, however, provide for them.

We are sure that even extremely simple procedures along the lines we describe would make considerably easier the task of some writers. Those who work to integrate very large bodies of disparate text-- say, Tolstoi, who covered the floors of his dacha with "noodles" of writing, or Vladimir Nabokov, who is said to have written *Lolita* on 4x6 cards, might find the machines' versatile checking and recall functions a great help for doing just what they have been doing. Others, who start at the beginning and proceed to the end, like James Fenimore Cooper, might have little use for such things. (It is an amusing conjecture that in general the hack writers work would tend to at top speed without aid, whereas the good writers would be slowed by the formerly trivial mechanics of filing and comparing. But we emphasize that this is conjecture.)

These programs could be useful not merely for writing orderly text or novels, but wherever anyone desires to compare qualitatively certain combinations of materials with complex implications or suggestions. For instance, they might be useful to a motion-picture director testing different possible arrangements in the editing of his film. It would be logically trivial to build a machine which "tries out" certain strings of shots, perhaps by generating a control-tape that prints them when left in the right machine overnight with the negative.

The problem in editing film is essentially to find out what strings of shots, and occurrences within shots, are will produce a narrative or effect which is satisfactory. To find the best such string is usually an impossible idea, because of the vast numbers of possible rearrangements and their detailed implications for other parts of the picture.

However, we think it is not too much to hope that the implication and narrative-sequence programs discussed above would broaden the director's own grasp of the materials he is working with, improve quality and lower the cutting budget.

Similarly, the arranger of texts, preparing parts of docs to be read with the use of type I programs, would be able to test out different types of arrangements, developing them more fully and more quickly, by the use of such programs. This would be of special interest if he were trying to map a large number of pathways into the material, for readers with different backgrounds.

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TYPE III PROGRAMS: systems of display configuration.

In describing the type I and II programs, we have been quite vague about the means of displaying their output. A high-speed printer or cathode-ray display would be adequate for type I, but somewhat cramping for type II. It is our general contention that

Let us now discuss display configurations as they are commonly used. Diagrams on the blackboard, periodic tables, colored overlays for large maps and texts, all serve to help mental unification of diverse materials. The benzene ring, the fourfold table, Parsonian interchange diagrams, all serve to show relations more tangibly than does text.

12) The n-space diagram program. (We now assume a display device of higher versatility. It shows text in at least two sizes, can change the relative positioning of different parts of the text, and side-cues such as their type-fonts and color; it also permits storing a number of display components-- boxes, lines and arrows-- which may be displayed in and around text, and labeled with text.) This program permits an arranger to set up diagrams of great complexity, which may be seen in a number of inversions, and whose parts can be abstracted for study.

One such display configuration would be the text-matrix. Rows and columns may be labelled with words or phrases, and short text blocks may be put in the cells. Some display inversions of the text-matrix would rearrange the rows and columns, and clear out the rows and columns that the user did not want to study at a particular moment. He might make a display query regarding a certain cell, which would bring forth an explanation of why that thing was in that cell.

Outlines, and trees of text, would be other such display configurations. Certain outlines or diagrams "central," remaining fixed, with collateral and explanatory material to appear as "overlay," perhaps in a distinct color, explaining this particular configuration in a given context.

Display inversions are those changes in a display which keep its substance constant. Other display operations would change the display while maintaining certain configurations, much the way sequential charts in science museums have running lights which call attention successively to different parts and connections.

By "n-space" display configurations, we mean that the possible variations and inversions of a display are limitless. All sorts of chains and conditional arrangements can be prepared to be shown to particular people at particular times. Their utility is determined by the kinds of diagrams and successive transitions which are most comprehensible to the user.

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7) General caretaking systems. Means are needed for keeping track of / Whatever chaotic ensemble of texts and partially-ordered collateral materials have been assembled in storage. It will keep track of the "kinds" of users for which "arrangements" have been made, in the arranger's terminology. The caretaking program will assemble and store information about it, such as: the total quantity of text; the different indexing-systems that have been stored; the different pathways that have been traced through it by arrangers, along with their lengths and other information supplied by the arranger-- such as the material one should know beforehand in order to understand it. The caretaking program can also record all the ~~changes~~ ~~and~~ things that happen in the reading chronologically. Thus a user can ~~never~~ keep track of all the things he has read if he wants to perform later searches; the state of an idea can be traced in the author's program, if he wants to know what he had in mind at an earlier time.

Fix

In this category also go general lookup facilities which will find certain words in the text, prepare concordances of the occurrence of these words on demand, and so forth.

The caretaking program would allow the user to monitor his own activities: telling him how far he has to go, how much he has done already, and what marginalia might interest him.

The caretaking program would also have provisions for such things as "insulability"-- if a user works best by studying one text closely without distraction, he would not be informed of others which arrangers think relevant; if he works best by comparisons and digressions, he would be repeatedly signalled as to the other materials available.

Goes After

9) Master control program. Many possible arrangers may want to put confidential materials in the machine; in this case some superordinate program is necessary to discriminate among users who may and may not see these materials. Similarly, the master-arrangers may not wish certain materials to be available except on completion of other steps. This machine would provide these safeguards.

We are not commenting on the desirability of such ~~things.~~ precautions. In this paper we deal only with possibilities. We need only add that the versatility of possible machines requires that the minor tyrannies of the world of information be made explicit.

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Philosophical statement.

These programs ~~have~~ are related to a general philosophical model we have discussed at length elsewhere, that of the "schematic," or ~~changing~~ evolutionary referential network. Some ~~of~~ examples of the ~~changing~~ evolutionary referential network are a scientific theory; the beliefs in a man's mind; and the structure of a bureaucratic organization over time.

The general schematic model gives us some criteria for "unity," which was discussed above and will not be detailed now. We would like to discuss how some of the programs exemplify this model.

The n-category system allows categories to be built and change over time. This is similar to the problem of changing partions and dimensions. The n-pathway program is a changing schomatic of partially ordered materials, etc., etc. That 'display ~~[illegible]~~ questions' conform to this model is obvious.

It should be noticed now that certain obvious concepts which we have known in the fields of books and academics are bound to degenerate, merely because they are no longer so clearly applicable schematically. The book will degenerate as a distinct entity: both in the case of anthologies, which are now sets of pathways and commentary collateral to greater stored texts, and for other books--for instance, critical works which compare and unite the works of others, which will also begin as outlines, categories and pathways. The academic formality modes which distinguished the finished book from research reports memoranda and idea-fragments will in part break down, partly from the ease of storing the new material and relating it to the old.

Summary of the programs. We have tried to point out some of the possibilities that exist for the imaginative development of the information-retrieval complex at all levels of use; not merely for finding a small, clearly defined set of items, as most retrieval projects hope to do; but for making parts of a large collection of things available, comprehensible, and easy to work with.

When we advocated the elimination of paper we were serious. There are problems both of technological development and economics. However, the trend to satellite systems with multiple input and output stations around a central computer makes the availability of an enormous program and file to a large number of current users plausible as a coming development.

The unity of the programs we described should be evident by now. There is no reason they cannot all be a part of the same thing; they are certainly desirable if they can offer any improvement over the methods now used; and we hope that by pointing out this unity, work on component parts can be better oriented to their eventual unification.

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Last comments.

If these taske seem Utopian or bizarre, we think they are no more so than the generalized tasks x now available for computers-- for inatance, their use to guide machine-ehop operations mereiy on the basis of design specifications for the desired metal part. What hes seemed most implawsible to other people, tw when we heve discuseed these ideae, has been the adaptability of the machines to qualitative work. Our contention is that this is because few writers, for instance, have been interested in the syatematization of their actual needs-- as they would recognize them if they understood possible machine capacity.

In a sense, it would be possible to begin writing the software for these programs tomorrow. Sx However, this would be in severei ways premature-- not wowmwmb because of the typea of thinge available hardware cen do today, but because of their current mai-adaptation to such uses. New peripheral equipment ixxx is needed thst peopie can use handily, with iess than back-breaking coet -- typewriter keyboards tbat wili take one line and input it to x the machine directly after it has been proofread; pleasanter xxxxxxx economical display-systems that can be used on-line and present the material with bulk, clarity xxx and the organizing aids of displsy xxxxxxx described above.

Furthermore, and even more importantly, research is needed on the forms of organizing commands (for type II programs) end the types of displey configuretion that best mesh with human capacities. If these are to assume atandardized, conventional forms-- and it x seems obvious that they mightxx, iike tbe typewriter keyboard and the automobile dashboard-- the research should take place before xxxxxxxxxxxxxx any old eet fall into usage. The only way to do this research is by writing software for existing machines and testing it-- on people who need to think, n not ebout machines, but about ideas.

OF COURSE people can adapt. There will always be a "sickness" about human nature, there will always be social process and social structure intertwined among whatever systems and conditions exist.

The embarrassment in thinking about human beings of such future times, however, lies in this:

if we expect that it is any care, or feel to care for things like those that mean the most to us, it is difficult to conceive such a future time, or to hope for it.

How will it come that those living now can care for a futurs — that makes sense? Can this question be shortest?

'Functionalist' might merely say that "adaptive" actions will take place, ways will be found to structure gratification and loyalty — but this bypasses our question. For if these adaptations are not to be haphazard and spastic, the conditions of technology demand that we care with thought and hopes that involve details and preparation.

Besidea personsl fears of the firebsll, though, there sre other conceptusl changes in the very notion of its possibility. In ~~the days of~~ "saturstion bombing" ~~in World War II~~ [World War II]; for instance, and at Hiroshims and Nagsssaki, the destruction had some phenomenal meahing in human terms-- the maiming snd screams, the ~~broken families~~. The concept of thermonuclear war is different; it considers the litersl snnihilation of the blsat sres, which in terms would only mean the obliteration of consciousness of vast numbers of p[eople], the disappesrsnce of cities-- gone like Carthsge. ~~The other effects, still~~

In some importsnt sense this is different. It is ~~phenomenally~~ [phenomenal] more like consigning these people to the past thsn like killing them. The other ef[fects] of maiming snd sesring, etc., sre difficult to relate to this centr[al] Is the annihilstion of ten million in the center worse than the maiming [of] million in the periphery? In this discussion we wish to point only [to the] conceptusl difficulty of assigning the old idess and sympathies to the new universe of the possible.

A relsted example is the esrthquske that destroyed s city in North Africs two yesrs ago. After s brief sesrch for evident survivors, the rubble was "disinfected" with poisonous msterial. In this [illegible] Undoubtedly there were people still alive there; how is one to imagine it? [illegible]

[illegible] of plausib[illegible] offer th[illegible] for a per[illegible] impossible [illegible] inside [illegible] known and simple [illegible] will [illegible] appropriate or [illegible] or plausible to [illegible] schematics will [illegible]

VIII [illegible]VERCASTS

The availability of plausible doctrine

The unity of everything

My how the [illegible] interlocks with it all
& it would look human at these future times

BUT WE OUGHTTA THINK HARD RIGHT NOW

In an earlier chapter we ~~So far we have~~ considered these things most mechanically, [illegible] as if the character of decisions ~~[illegible]~~ people and things, could be dealt with in a [illegible] way. ~~[illegible] accounting department [illegible]~~ at [illegible]

We ~~have dwelt~~ dwelled on the ~~notion~~ spreading, intricate distribution of explicit/decision and implicit [illegible] in the world because ~~[illegible] it is important~~ of their growing importance. What is even more important, however, is ~~the~~ another set of changes that appear on the horizon: the concurrent

~~[illegible]~~
~~But we see as most important the changes in people~~ [illegible]
change in people and psychological climate ~~[illegible]~~ Some of these changes that [illegible] as the old schematics break down. ~~[illegible]~~
are beginning, some are merely possible. ~~Our discussion will be speculative,~~ Here our discussion will be at its most speculative. [illegible]

~~are related to the~~ more recent discussion ~~in earlier chapters~~ of human mind-systems and ~~caring.~~ affections. ~~[illegible]~~ We want to look briefly at the

~~[illegible]~~: effect of the changes in things on personal [illegible]
~~[illegible]~~ of [illegible].

mainly about [illegible] ~~[illegible]~~
ideas & things —
inanimate …
[illegible] betw things & people
to ~~[illegible]~~
characteristics of
[illegible] that come in when
dealing w people …

QΣ ISX

THE BIG ENDLESS POINTS
1) All personality theory then special cases
2) Accounts for [illegible] inconsistencies in beh.
3) Shows how equivalences are possible from person to person having dft BG & on dft [illegible]-models

CDHS
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PERSONAL INTERLOCK e.g.
COYOTE & Elders
FRENCH EYE-USE

SAME PERSONALITY-SYSTEM can be arrived at from all different sources & sequences

ISX - ACTh

MANNERS gibe & don't gibe
SMALL GESTURES
LOVEMAKING
∴ PARSONIAN INTERCHG IS MECHANISM TO CONVERGE THEM but can't operate perfectly since there are abrupt evolutions & new gibings w dft responses
NEW INTERACTIVE PROSPECTS POP TO BEING

COHERENT PERSONALITY
'Culture, determined'
Σ will be recognized & treated as often explicable at levels
CONSCIOUSLY shaped?
Not nec & why not?

QΣ Cult & Mind-Systems

HEGELIAN ~~[illegible]~~ PROGRESSION TOWARD PERFECT FULFILLMENT OF SOME IDEA — of society e.g. — can be reasonable if we acknowledge that some such social idea-system ~~[illegible]~~ may well have a 'perfect' form, i.e. a sort of conceptuo-real setup which is coherent & stable.
(BUT WHOSE VARIANTS & PERVERSIONS ALSO OF INTEREST — Parsons, Weber.)

The adequacy & stability of GEIST 'systems … informal, cultural
∴ ROLE is such a thing

QΣ ISX

There need not be orientation to either proximate or 'absolute' goals ~~Rather, I see to~~ (Parsons, Weber.) I don't see what either means; moreover, shifts of orientation of desire are also a legitimate part of the game.

Transitions of possible dests
STATE-to-STATE — depending greatly on sequential dest — preexisting commitments blocking etc

POSSIBLE ADVOCACIES.

Clearly going to [HAVE TO] be much more planning in future — even if it is only to be leading decisions etc.

BUT KINDS OF PLANNING THAT MUST NOT TAKE PLACE? for which are they?

TMC

[illegible]

DOWNFALL OF PARTICULAR ADVOCACIES

- # Wiretapping (like trying to stop use of electronic [illegible])
- # Disarmament simpliciter

"THE WORK: PLANNING IN STRAN[illegible] [illegible]ATE CURRENCIES

- ¶ is necessary. There are the alternatives. (e.g. death or [illegible])
- ¶ is mainly a recursion of the problem to earlier and more manipulable stages. There will be more & more as things change so committees decide more? (Bomb - explicit tension — reverted a couple steps.)
- ¶ Our luck is that the problems don't fall this way in [illegible] [illegible]

TMC

Access [illegible]
policy

Cl. [illegible]
R[illegible]
Olympia

~~[illegible]~~ proper [illegible]
& priority [illegible] interaction →

Persistence of
[illegible] details

Decision considerations not parallel.

The proliferation
of 'crypt'
decision entities

WHO DECIDES
HOW & WHY?

ΨΣ BNW

COLLECTING ATTENTION TO INANE QUEX.
[Stall a gallop [illegible]?]

COLLECTING NATTENTIONS to pros. of greatest urgency — [illegible] Also control
To COMMUNISM VS CAPITALISM
When e.g. [illegible] are needed in particular points

Focus of interest groups at moments on particular kinds of [illegible] ... of the audience, with cyclical apathy. Delays & remembrance of only publicity & the [illegible] public forgetting & [illegible] considerations... we'r all [illegible].

CRUCIAL TO SCRUTINIZE technique of decision. Put to referendum? How? Give significant Hearing? How?

Concurrent with the growth of generality and [illegible], we ~~At the same time we must~~ observe the dispersion of choices of of the widest consequence every kind. Choices/are made daily, by everyone: government agencies, private organizations, eccentric millionaires. The climate in which they are made is drastically important.

Public commitment, forays & finding decisions.

'Political' reasons for decision

Opportunity, expediency, popularity...

According to the sanguine view, public attention is focused on "basic" questions and professional competence governs "technical" questions. We believe this view to be as absurd as it is widespread. However, those who share this feeling with us generally believe that some solution exists in the informing of the public, or the improvement of communication. We are not sure of this either.

What is the distinction between a basic question and a technical one? When decisions have such far-reaching interlockings with so many other different things, this distinction becomes schematically unclear. There are some contexts in which decisions ~~do have~~ can be called 'technical,' for their obscure purport and few consequences; in these contexts it is not a pointless distinction. But to assume its universal schematic applicability is groundless.

But this distinction is only one of the many schematics by which people will order their decisions; a vast number of characteristics and divisions will be adduced as causes for treating a decision-problem in a certain way, turning it over to a certain agency, or dismissing it entirely. An impending choice can be forced into any kind of mold, proprietary or professional conceptual scheme. To think otherwise would be to expect anyone, at any moment, to begin speculating on all the far-flung consequences and prospects for all the decisons and trends around him. Few people are like that. Even people who take on a sense of responsibility for distant things-- pacifists, for example-- find some way of limiting those things they oppose, and sharply delineating their ranges of concern and non-compliance. And practiced decision-makers, with particular outlooks and sets of mental involvements, are merely confused when questioned about the more far-flung consequences of their decision. It is understandable

that they will say, "Well, we don't consider that."

The Jamaica Appearance (Continued)

[illegible]

[illegible] …tions made it look … [illegible]

[illegible]

The philosophical problem of consciousness will return with full force when dealing with, say, the possibility of programming large-scale equipment to simulate the mind of a given person. At what point is it reasonable to say the machine _is_ the person?

The replacement of part of a body does not make someone a different person — [illegible] replacement of [illegible] about the total [illegible] and personality [illegible] it would be possible [illegible] programmed to be like the person [illegible] from the person in some important way?

Few people would ask that about the senile in public homes today.

Note [illegible]

The progress of neurologicsl scéence and manipulation might foresee forms of brain-programming -- for example, where sn individual might rent out a portion of his brain to be used as a computer sdjunct for certain types of study. Assuming that some damsge wsa done to the existing memories, the question of whether sn individusl hsd a "right" to do so would be somewhere between his right to be tattooed and his non-right to commit suicide.

The line between human and non-human will become indistinct on other fronts. A project is now in operation to send out radio messages to possible listeners on other planets. How sre we to treat them if found? And if dolphins and toothy whaέes have indeed the intelligence of man-- who will protect them, and what will we tell them? -- or will we just try to enlist them for hunting submarines?

Note [illegible]

There is a popular myth that ~~[illegible]~~ medical science is [illegible], to [illegible] health [illegible] there is really a trend [illegible]. On the contrary, [illegible] toward [illegible] and the [illegible] ~~[illegible]~~ [illegible] ~~[illegible]~~ [illegible] spot [illegible].

The lines of ~~m~~ medical progress are now generally clear. ~~While there are occasional broad-front breakthroughs~~, such as the polio vaccine or ~~the~~ penicillin for syphilis, it is clear by now that most medical discoveries are specific and expensive. ~~It is possible to build~~ artificial lungs, hearts and kidneys, ~~and~~ ~~their~~ overhead cost of is in the hundreds of dollars per hour. It is possible to keep certain types of patients alive for a great ~~staggering~~ length of time despite ~~[x-ed out]~~ the degenerative steps of their disease~~, for money~~. ~~It is likely~~ foreseeable that ~~all~~ these lines of ~~developments, [x-ed out] continued for any length of time, will bring about an interesting new state of affairs: that~~ It is foreseeable that [illegible] if [illegible] money [illegible] the human organism, or parts of it, can be kept alive for an exorbitant length of time~~, at a great cost.~~ ~~[x-ed out]~~

~~[x-ed out]~~ This should eventually develop into an explicit problem: just what is to be kept alive, and who will pay?

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A head, or brain-stem, supported in some vehicle and nurtured by ~~some~~ solution, ~~might~~ may well be ~~able~~ kept electrically active long after ~~the [illegible]~~ rest of the body has ended. to think ~~and talk. What then?~~ ~~[x-ed out]~~ Cost, space, and the dispersion of relatives ~~[x-ed out]~~ will call the question: who cares? The [illegible] and [illegible] will be [illegible]. ~~[x-ed out]~~

~~. . . some ways the most urgent case, will not be discussed here.)~~ When a thing is alive or dead, human or~~xx~~ not, has been much clearer in the past than it is going to be in the future.

For example, the proliferation of things which are not alive, ~~but~~ or not particularly alive, but have the interactive properties of living things, and the feel of living things. Many objects have for a long time had the feel of living things-- automobile gearshifts, stubborn office machinery-- but their acquisition of the interactive properties of beings is something new. By this we mean ~~the~~ their acquisition of "action center" capacities, as discussed in an earlier chapter: the ability to calculate the effects of self-presentation, ~~the advantage of~~ threats, ~~and~~ of cutting oneself off from communication, and so on. Organizations which are not alive, have long had these capacities. But we m[illegible] ~~(("Action Center theory," as discussed in an earlier chapter.) When machines That this applies to organizations as much as people should be clear, and organizations are not alive.~~ When large-scale computing facilities are tied together by wire, we may expect to see ~~xxxx~~ machines bargaining for time and priority much as individuals do now.

This development should make it much more of an academic question as to whether they have consciousness or not. For at that time we will find ourselves constrained -- or motivated-- to treat them personally as members of the community in some sense. Whether they do have consciousness is merely ~~xxxx~~ a ~~further~~ philosophical confoundment, likely to [illegible] less attention [illegible] in the f[illegible] than [illegible] now. ~~as discussed below.~~ ~~[illegible] appropriate to our last chapter.~~

CERTAIN UNPLEASANT IMPLICATIONS of Tech- 1969

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The speed, capacity, and economy of machines make possible ranges of activity which had not been possible before. For instance, blacklists and greylists may be maintained by public and private organizations ~~to a much~~ [illegible] with much more ease than before; [illegible] & extremist organizations can prepare and maintain files and plans ~~for overthrow and subversion with [illegible]~~ in more clear-cut detail and realistic fashion; ~~possible trouble-makers can be traced from employment~~ The movements of individuals — or, for instance, of particular cars in the highway system — may be ~~[illegible] better~~ traced ~~[illegible]~~ [illegible] accuracy.

the unity of and interlock of data [illegible] means this may happen without explicit attention, as a byproduct, for which no one is responsible.

NORx

SLEEP PILLS

[illegible]